***Datasheet***

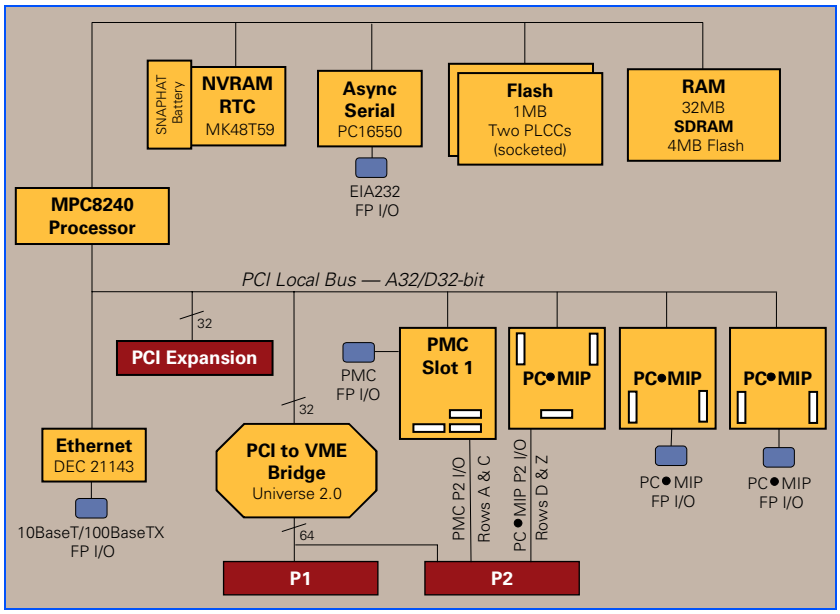
*MVME2100 Series*

*VME Processor Modules*

MOTOROLA
intelligence everywhere™

**Modular single-board computer providing high-performance expansion I/O**

The MVME2100 series of VME processor modules is a family of highly modular single-board computers for VME applications. At the heart of the MVME2100 is the MPC8240, a highly integrated PowerPC architecture microprocessor with an MPC60x class core, an advanced memory controller, and a peripheral component interconnect (PCI) interface. With the MPC8240 and a combination of a PCI mezzanine card (PMC) and PC•MIP mezzanine slots, the MVME2100 provides customers with a high-performance building block for I/O expansion in industrial automation, telecommunications, medical, scientific, or imaging applications.




- MPC8240 32-bit microprocessor
- L1 cache—16KB/16KB MPC60x class
- 32MB of on-board SDRAM with optional ECC protection
- Two 32-pin PLCC/CLCC sockets for Flash memory; up to 1MB capacity for on-board firmware or user-specified requirements
- 4MB on-board Flash memory for user-specified requirements
- One IEEE P1386.1 compliant 32-bit PMC slot with front-panel and P2 I/O
- Three 32-bit PC•MIP expansion slots, compatible with VITA 29 Draft Standard: one Type I slot with rear panel I/O and two Type II slots with front panel I/O
- 32-bit PCI expansion mezzanine connector
- Ethernet transceiver interface with 32-bit PCI local bus DMA, 10/100Mb/s with auto-negotiate speed select
- 8K x 8 NVRAM and time-of-day clock with replaceable battery backup
- Four 32-bit timers, one 16-bit timer, one watchdog timer

## MVME2100 DETAILS

**PC•MIP Expansion**

To maximize I/O expansion flexibility, the MVME2100 features a combination of PC•MIP and PMC slots. PC•MIP is a new mezzanine standard that combines the benefits of the small form factor of IndustryPack with the performance of PCI. The PC•MIP specification is in draft form before the VMEbus International Trade Association (VITA) Standards Organization as VITA 29. It is available in PDF format at VITA's standards Web page: http://www.vita.com/vso/stds.html

The MVME2100 provides one Type I PC•MIP slot with rear I/O via the P2 connector and two Type II PC•MIP slots with front panel I/O. The two Type II slots can accept either one double-wide or two single-wide PC•MIP cards.

**PMC Expansion**

In addition to three PC•MIP slots, the MVME2100 provides one IEEE P1386.1 compliant PMC slot that supports both front-panel and P2 I/O, and a mating connector to a PMC expansion mezzanine for applications requiring more real estate. A complete catalog of available off-the-shelf PMCs can be found at http://www.groupipc.com

In addition to providing high-performance expansion I/O, the mezzanine slots form a common architecture for future generations of products. Changing I/O requirements can be satisfied by simply replacing the PMC or PC•MIP mezzanines while reusing the same base platform, reducing the long-term cost of ownership.

**VME64 Extension Connectors**

To maximize the capabilities of the MVME2100, 5-row, 160-pin DIN connectors replace the 3-row, 96-pin connectors historically used on VME for P1 and P2. Two rows, Z and D, have been added to the VME P1/J1 and P2/J2 connectors providing a user with additional I/O. The VME64 extension connector is 100 percent backward compatible with existing VME card systems.

**Front Panel Handle Options**

Part of the VME64x specification defines the use of new injector/extractor handles as defined by IEEE 1101.10. A primary benefit of this handle type is easier insertion and ejection of the VME board into and out of a backplane. Motorola offers versions of our products that are compatible with this standard.

In addition, we provide versions with the small Scanbe handles traditionally provided on VME. Consult your sales representative for part numbers and ordering details.

## SPECIFICATIONS

### Processor

| | |
|---|---|
| **Microprocessor:** | MPC8240 |
| **Processor Core:** | MPC60x class |
| **Core Frequency:** | 200 MHz |
| **External Bus Frequency:** | 66.67 MHz (at 200 MHz) |
| **On-Chip Cache (I/D):** | 16KB/16KB |

### Memory

| | |
|---|---|
| **Main Memory:** | Synchronous dynamic RAM at 66 MHz or 83 MHz |
| **Capacity:** | 32MB |
| **EEPROM/Flash:** | On-board, programmable |
| **Capacity:** | 1MB via two 32-pin PLCC/CLCC sockets; 4MB surface mount |
| **Read Access (4/8MB port):** | 35 clocks at 66 MHz or 36 clocks at 83 MHz (32-byte burst) |
| **Read Access (1MB port):** | 236 clocks at 66 MHz or 268 clocks at 83 MHz (32-byte burst) |
| **NVRAM:** | 8KB; 4KB available for users |
| **Cell Storage Life:** | 50 years at 55° C |
| **Cell Capacity Life:** | 10 years at 100% duty cycle |
| **Removable Battery:** | Yes |

## VMEbus ANSI/VITA 1-1994 VME64 (IEEE STD 1014)

| | |
|---|---|
| **DTB Master:** | A16–A32; D08–D64, BLT |
| **DTB Slave:** | A24–A32; D08–D64, BLT, UAT |
| **Arbiter:** | RR/PRI |
| **Interrupt Handler/Generator:** | IRQ 1–7/Any one of seven IRQs |
| **System Controller:** | Yes, jumperable or auto detect |
| **Location Monitor:** | Two, LMA32 |

## Ethernet Interface

| | |
|---|---|
| **Controller:** | DEC 21143 |
| **PCI Local bus DMA:** | Yes |
| **Connector:** | 10/100BaseT routed to front panel, RJ-45 |

## Asynchronous Serial Port

| | |
|---|---|
| **Controller:** | PC16550 |
| **Connector:** | Routed to front panel, RJ-45 |

## Counters/Timers

| | |
|---|---|
| **TOD Clock Device:** | MK48T59; 8KB NVRAM |
| **Real-Time Timers/Counters:** | Four, 16-bit programmable |
| **Watchdog Timer:** | Time-out generates reset |

## Miscellaneous

| | |
|---|---|
| **Front panel:** | Reset and Abort switches; three LEDs for Fail, Activity, SCON |

## Board Size

| | |
|---|---|
| **Height:** | 233.4 mm (9.2 in.) |
| **Depth:** | 160.0 mm (6.3 in.) |
| **Front Panel Height:** | 261.8 mm (10.3 in.) |
| **Width:** | 19.8 mm (0.8 in.) |
| **Max. Component Height:** | 14.8 mm (0.58 in.) |

## Power Requirements

| | **+ 5 V ±5%** |
|---|---|
| **MVME2100 w/ MPC8240 @ 200 MHz:** | 12.5W @ 4.875 – 5.25 V |

**Note:** +12 V and –12 V power is not used on the board but is available to the PMC and PC•MIP sites.

## IEEE P1386.1 PCI Mezzanine Card Slot

| | |
|---|---|
| **Address/Data:** | A32/D32, PMC PN1, PN2, PN4 connectors |
| **PCI Bus Clock:** | 33 MHz |
| **Signaling:** | 5 V |
| **Power:** | +3.3 V, +5 V, ±12 V, 7.5 watts maximum per PMC slot |
| **Physical Dimensions:** | 74 mm x 149 mm |
| **Module Types:** | One single-wide, front-panel I/O or P2 I/O |

## PC•MIP Mezzanine Card Slots

| | |
|---|---|
| **Address/Data:** | A32/D32 |
| **PCI Bus Clock:** | 33 MHz |
| **Signaling:** | 3.3 V (+5 V tolerant) |
| **Power:** | +3.3 V, +5 V, ±12 V, the PC•MIP standard does not limit maximum power per slot |
| **Physical Dimensions:** | 47 mm x 90 mm |
| **Module Types:** | One Type I with P2 I/O via Rows D and Z, Two Type II with front-panel I/O, support for either one double-wide or two single-wide Type II PC•MIP boards |

**Note:** User I/O using connector P3 of the Type II PC•MIP boards is not supported.

## PCI Expansion Connector

| | |
|---|---|
| **Address/Data:** | A32/D32 |
| **PCI Bus Clock:** | 33 MHz |
| **Signaling:** | 5V |
| **Connector:** | 114-pin connector located on the planar of the MVME2100 |

## Software Support

The MVME2100 is supported by a variety of operating systems, including a complete range of real-time operating systems and kernels.

## Demonstrated MTBF

(based on a sample of eight boards in accelerated stress environment)

| | |
|---|---|
| **Mean:** | 190,509 hours |
| **95% Confidence:** | 107,681 hours |

## Safety

All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

## Environmental

| | **Operating** | **Nonoperating** |
|---|---|---|
| **Temperature:** | 0° C to +55° C, forced air cooling | –40° C to +85° C |
| **Humidity (NC):** | 5% to 90% | 5% to 90% |
| **Vibration:** | 2 Gs RMS, 20–2000 Hz random | 6 Gs RMS, 20–2000 Hz random |

## Electromagnetic Compatibility (EMC)

Intended for use in systems meeting the following regulations:

| | |
|---|---|
| **U.S.:** | FCC Part 15, Subpart B, Class A (non-residential) |
| **Canada:** | ICES-003, Class A (non-residential) |

This product was tested in a representative system to the following standards:

CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions: EN55022 Class B; Immunity: EN55024

## ORDERING INFORMATION

| Part Number | Description |
|---|---|
| **MVME2101-1** | 200 MHz MPC8240, 32MB SDRAM, 5MB Flash, original VME Scanbe front panel and handles |
| **MVME2101-3** | 200 MHz MPC8240, 32MB SDRAM, 5MB Flash, IEEE 1101 compatible front panel with injector/ejector handles |
| **Related Products** | |
| **PMCSPAN1-001** | PMCSPAN-001 with original VME Scanbe front panel and handles |
| **PMCSPAN1-010** | PMCSPAN-010 with original VME Scanbe front panel and handles |
| **Documentation** | |
| **V2100A/IH** | MVME2100 Installation and Use Manual |
| **V2100A/PG** | MVME2100 Programmer's Reference Guide |
| **PMCSPANA/IH** | PMCspan Installation Guide |
| **PPCBUGA1/UM** | PPCBug Firmware User's Manual, Part 1 of 2 |
| **PPCBUGA2/UM** | PPCBug Firmware User's Manual, Part 2 of 2 |
| **PPCDIAA/UM** | Firmware Diagnostics Manual |
| Documentation is available for online viewing and ordering at http://www.motorola.com/computer/literature | |


**Motorola Computer Group Regional Offices**

NORTH AMERICA: Tempe, AZ 800-759-1107 or 602-438-5720

EUROPE: Loughborough, UK +44 1509 634300

EAST MEDITERRANEAN: Tel Aviv, Israel +972 3 568 4388

ASIA: Shanghai, China +86 21 5292 5693

PACIFIC RIM: Tokyo, Japan +81 3 5424 3101

ASIA/PACIFIC: Hong Kong +852 2966 3210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